

Serial No.: 10/665,471
Art Unit: 2629

Docket No.: 03FN021US1
Ref. No.: FUJ.069

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AMENDMENTS TO THE CLAIMS

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1. (Currently amended) A gamma correcting circuit comprising:

a basic voltage generating circuit which has one end connected to a first high-potential power supply and the other end connected to a first low-potential power supply and generates and outputs a plurality of basic voltages by dividing a voltage difference between a voltage of said first high-potential power supply and a voltage of said first low-potential power supply;

a gamma correction resistor circuit having a plurality of resistor elements connected in series between a second high-potential power supply and a second low-potential power supply, and gray-scale voltage output terminals and n (n being a positive integer >1) reference-voltage output terminal groups, both provided at respective nodes between said resistor elements, each of said n reference-voltage output terminal groups including a maximum of u (u being a positive integer >1) reference-voltage output terminal candidates; and

a gamma correction adjusting circuit having n gamma characteristic adjusting units in association respectively with said n reference-voltage output terminal groups, each of which said n gamma characteristic adjusting units selects one of a maximum v (v being a positive integer >1) basic voltages supplied from said basic voltage generating circuit as a reference voltage based on correction adjustment data and selects an output terminal for said selected reference voltage from said maximum of u reference-voltage output terminal candidates included in the associated one of said n reference-voltage output terminal groups based on said correction adjustment data, said gamma characteristic adjusting units each comprising:

a data latch which fetches and latches said correction adjustment data at a predetermined timing;

a reference voltage selector which receives a plurality of basic voltages and selects and outputs one of said basic voltages as a reference voltage based on said correction adjustment data latched by said data latch;

a node selector which has a first terminal, a second terminal, a switch circuit and a plurality of voltage output terminals that comprise the associated reference-voltage output terminal group and selects, from said voltage output terminals of said associated reference-voltage output terminal group, the reference-voltage output terminal which is connected to said first terminal and said second terminal by said switch circuit, based on said correction adjustment data latched by said data latch; and

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an operational amplifier having a positive input terminal to which an output of said reference voltage selector is input, a negative output terminal connected to said first terminal and an output terminal connected to said second terminal.

2. (Original) The gamma correcting circuit according to claim 1, wherein said basic voltage generating circuit has a plurality of resistor elements connected in series between said first high-potential power supply and said first low-potential power supply and outputs individual basic voltages from nodes between those resistor elements.

3. (Canceled)

4. (Currently amended) The gamma correcting circuit according to claim [[3]] 1, wherein said reference voltage selector selects a reference voltage based on a first predetermined portion of said correction adjustment data latched by said data latch and said node selector selects a reference-voltage output terminal based on a second predetermined portion of said correction adjustment data.

5. (Currently amended) The gamma correcting circuit according to claim [[3]] 1, wherein said switch circuit of said node selector includes a plurality of switches having ~~one~~ ends connected together to said first terminal and said second terminal and other ends connected to respective voltage output terminals of the associated reference-voltage output terminal group and enables ~~that the~~ one of said switches which is selected based on said correction adjustment data.

6. (Currently amended) The gamma correcting circuit according to claim [[3]] 1, wherein said node selector has:

a first switch circuit including a plurality of switches having ~~one~~ ends connected together to said first terminal and other ends connected to respective voltage output terminals of the associated reference-voltage output terminal group; and

a second switch circuit including a plurality of switches provided in association with said switches of said first switch circuit, equal in number to said switches of said first switch circuit and having ~~one~~ ends connected together to said second terminal and other ends respectively connected to said other ends of said switches of said first switch circuit, and

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enables that one of said switches of said first switch circuit which is selected based on said correction adjustment data and that one of said switches of said second switch circuit which is associated with said selected switch.

7. (Original) A display panel drive apparatus having a gamma correcting circuit as recited in claim 1.
8. (Original) A display panel drive apparatus having a gamma correcting circuit as recited in claim 2.
9. (Currently amended) A display panel drive apparatus having a gamma correcting circuit as recited in claim [[3]] 1.
10. (Original) A display panel drive apparatus having a gamma correcting circuit as recited in claim 4.
11. (Original) A display panel drive apparatus having a gamma correcting circuit as recited in claim 5.
12. (Original) A display panel drive apparatus having a gamma correcting circuit as recited in claim 6.
13. (Previously presented) The gamma correcting circuit according to claim 1, wherein the first and second low-potential power supplies supply power greater than zero.
14. (Currently amended) A display panel drive apparatus comprising:
 - a data-line drive circuit provided with a gray voltage; and
 - a gamma correcting circuit in electrical communication with the data-line drive circuit providing the gray voltage and comprising:
 - a basic voltage generating circuit which has one end connected to a first high-potential power supply and the other end connected to a first low-potential power supply and generates and outputs a plurality of basic voltages by dividing a voltage difference between a

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voltage of said first high-potential power supply and a voltage of said first low-potential power supply;

a gamma correction resistor circuit having a plurality of resistor elements connected in series between a second high-potential power supply and a second low-potential power supply, and gray-scale voltage output terminals and n (n being a positive integer > 1) reference-voltage output terminal groups, both provided at respective nodes between said resistor elements, each of said n reference-voltage output terminal groups including a maximum of u (u being a positive integer > 1) reference-voltage output terminal candidates; and

a gamma correction adjusting circuit having n gamma characteristic adjusting units in association with said n reference-voltage output terminal groups, each of which selects one of a maximum v (v being a positive integer > 1) basic voltages supplied from said basic voltage generating circuit as a reference voltage based on correction adjustment data and selects an output terminal for said selected reference voltage from said maximum of u reference-voltage output terminal candidates included in the associated one of said n reference-voltage output terminal groups based on said correction adjustment data, said gamma characteristic adjusting units each comprising:

a data latch which fetches and latches said correction adjustment data at a predetermined timing;

a reference voltage selector which receives a plurality of basic voltages and selects and outputs one of said basic voltages as a reference voltage based on said correction adjustment data latched by said data latch;

a node selector which has a first terminal, a second terminal, a switch circuit and a plurality of voltage output terminals that constituting the associated reference-voltage output terminal group and selects, from said voltage output terminals of said associated reference-voltage output terminal group, that reference-voltage output terminal which is connected to said first terminal and said second terminal by said switch circuit, based on said correction adjustment data latched by said data latch; and

an operational amplifier having a positive output terminal to which an output of said reference voltage selector is input, a negative output terminal connected to said first terminal and an output terminal connected to said second terminal.

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15. (Previously presented) The display panel drive apparatus according to claim 14, wherein said basic voltage generating circuit has a plurality of resistor elements connected in series between said first high-potential power supply and said first low-potential power supply and outputs individual basic voltages from nodes between those resistor elements.

16. (Canceled)

17. (Currently amended) The display panel drive apparatus according to claim ~~15~~ 14, wherein said reference voltage selector selects a reference voltage based on a first predetermined portion of said correction adjustment data latched by said data latch and said node selector selects a reference-voltage output terminal based on a second predetermined portion of said correction adjustment data.

18. (Currently amended) The display panel drive apparatus according to claim ~~15~~ 14, wherein said switch circuit of said node selector includes a plurality of switches having one ends connected together to said first terminal and said second terminal and other ends connected to respective voltage output terminals of the associated reference-voltage output terminal group and enables that one of said switches which is selected based on said correction adjustment data.

19. (Currently amended) The display panel drive apparatus according to claim ~~15~~ 14, wherein said node selector has:

a first switch circuit including a plurality of switches having one ends connected together to said first terminal and other ends connected to respective voltage output terminals of the associated reference-voltage output terminal group; and

a second switch circuit including a plurality of switches provided in association with said switches of said first switch circuit, equal in number to said switches of said first switch circuit and having one ends connected together to said second terminal and other ends respectively connected to said other ends of said switches of said first switch circuit, and enables that one of said switches of said first switch circuit which is selected based on said correction adjustment data and that one of said switches of said second switch circuit which is associated with said selected switch.

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20. (Previously presented) The display panel drive apparatus according to claim 14, wherein the first and second low-potential power supplies supply power greater than zero.